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DESCRIPTION

CONTAINER STORAGE BOX FOR DEFORMABLE CONTAINER
CONTAINING FINE PARTICLES FOR IMAGE FORMATION

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TECHNICAL FIELD

The present invention relates to a container storage box for packing up a deformable container which is easy to deform.

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BACKGROUND ART

The conventional container for storing the toner and the developer is a bottle or cartridge made of resin, and such a container is hard to deform so that the setting of the 15 container to the main part of the image forming apparatus is easy to perform.

However, from consideration of the environmental problem in recent years, deformable containers, such as bags, which are easy to deform, have become to be marketed for the 20 purposes of reduction of the use material and reduction of the garbage at the time of the disposal. It has been become that the deformable containers are filled with fine particles and used as the direct cartridges or the complement containers.

When using the deformable container as a cartridge, 25 it is likely that the container deforms during transportation

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or the contents coagulate with the container in the deformed state, and the problem may arise in that it cannot be set to the main part of the image forming apparatus.

Moreover, the problem may arise in that the
5 container is not correctly set to the apparatus due to the bending or deformation of the head portion of the container.

Moreover, the problem may arise in that the volume of the container when the toner is discharged is not easily decreased and the toner discharging capability is not
10 stabilized.

Moreover, the problem may arise in that the volume of the container is not decreased completely and the handling at the time of resetting deteriorates.

As countermeasures against the above-mentioned
15 problems, using a shock absorbing material for the packing material of the toner or the developer is conceivable.

However, the use of the shock absorbing material may cause the problem in that the packing material being discarded and the packing cost will increase, or the transportation and storage
20 efficiency will deteriorate because of the increase of the container size.

Moreover, in order to prevent the coagulation of the fine particles, which are the contents of the container, the recommendation of storage of the container in the
25 transverse direction is needed.

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To resolve the above problems, it have been necessary to provide the improved packing method and material with which the transportation of the deformable container without deforming the container is possible, taking out the 5 container from the packing state is easily performed, the buffer effect at the time of falling is offered, and the container is hard to deform during transportation so that the setting of the container to the image forming apparatus is not affected even if the contents coagulate.

10 On the other hand, there has been proposed the corrugated cardboard box with the partition attached, wherein the corrugated cardboard box is partitioned, and the storage goods can be packed up and protected so that the deformation of the storage goods is lessened (for example, see Japanese 15 Utility Model No.3039149).

In such corrugated cardboard box with the partition, two goods can be contained. However, if the storage goods are one-piece products as the unit, it is necessary to purchase each product in a separate state by taking out either from the 20 container storage box.

When the product is not used immediately after the purchase, the form of the container collapses. If the contents coagulate in the stored state, the setting of the product to the main part of the image forming apparatus 25 becomes difficult. And the shock absorbing material increases

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in the amount, and the packing material being discarded also increases or the container storage box itself becomes large. Thus, the problem arises in that the transportation efficiency deteriorates and the packing cost increases. Moreover, it is 5 likely that the corrugated cardboard box takes the shape of a rectangular parallelepiped, and the design characteristic is low.

DISCLOSURE OF THE INVENTION

10 A general object of the present invention is to provide an improved container storage box in which the above-mentioned problems are eliminated.

A more specific object of the present invention is to provide a container storage box as the packing material 15 wherein, when packing up a deformable container of the toner or the developer which is easy to deform, the deformation of the container at the time of transportation and the deformation of the container accompanying the coagulation of the contents are suppressed, the setting of the container to 20 the main part of the image forming apparatus is not affected, the container is protected and fixed without using the shock absorbing material, and the design characteristic is excellent, and moreover, the assembly in the box form is easy to perform and the packing material hardness is excellent.

25 The above-mentioned objects of the present

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invention are achieved by a container storage box for storage of a deformable container which comprises a flexible region and is capable of discharging fluidity contents for image formation when placed into a container loading part of an 5 image forming apparatus, the container storage box comprising sidewall faces which are rigid to prevent random deformation of the deformable container during storage, characterized in that the sidewall faces are provided to regulate a configuration of the deformable container in a configuration 10 accommodated in the container loading part when the deformable container is placed in the image forming apparatus.

When packing up a deformable container filled with the toner, the developer or the carrier, which is easy to deform, the container is packed up using a container storage 15 box containing the container while regulating it in a predetermined magnitude or configuration that can be set to the main part of the image forming apparatus.

According to the container storage box of the present invention, it is possible to inhibit the deformation 20 of the container at the time of transportation and the deformation of the container by the coagulation of the contents, prevent the influences on the setting of the container to the main part of the image forming apparatus, and protect and secure the container without using the shock 25 absorbing material.

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The container contained in the contained storage box of the present invention can be easily set to the main part of the image forming apparatus by taking out it from the packing material, the packing material being discarded is 5 reduced, there are few dead spaces, and the transportation and storage efficiency and the design characteristic are excellent.

According to the present invention, the problem that the container deforms and it becomes impossible to set to the main part of the image forming apparatus can be prevented.

10 Moreover, the effect that the container can be protected without using the shock absorbing material, and the effect that the number of the parts of the packing material can be reduced and the manufacturing cost can be low.

Moreover, since there is no component which fixes 15 the nozzle of the container, the effect that the assembly of the container storage box, and the packing and extracting of the deformable container which is packed up in the box are carried out easily is acquired.

Moreover, the buffer effect is acquired by 20 providing space at the upper part of the container receiving portion in the container storage box.

Moreover, by making the respective two opposing surfaces into a tapered configuration, the packing and extraction of the container can be easily performed, and the 25 opening of the box can be easily performed.

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Moreover, the deformation of the head of the container at the time of falling is prevented, and the effect that the configuration of the container is automatically regulated in the configuration accommodated in the desired 5 container loading part of the image forming apparatus is acquired.

Moreover, the effect that the space saving at the time of transportation and storage can be attained is acquired since the two or more container storage boxes can be piled up 10 and down vertically or arranged right and left horizontally.

Moreover, the effect of becoming easy to sense the vertical or horizontal arrangement of the two or more container storage boxes for the purpose of prevention of the coagulation of the contents of the container is acquired.

15 Moreover, it becomes easy to pile up the boxes and it is possible to easily automate the box manufacturing, such as sizing of the box. It becomes easy to pick out the one box with the mutual level difference from the set of the box.

Moreover, since the two or more container storage 20 boxes can be piled up in the opened state, the space saving of the packing material storage can be attained.

Moreover, by providing the small surface at the specified position, it is possible to prevent the reverse-attitude storage of the deformable container containing the 25 contents. And, by performing bending and bonding of the

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packing material, the falling strength of the container storage box can be increased.

Moreover, even if the two boxes are piled up, the effect that the container-related indication comes to be in 5 sight is acquired.

Moreover, when the two or more boxes are piled up, the effect which the projection in the container storage box serves as the hook when holding the box in the vertical arrangement by fingers is acquired.

10 Moreover, according to the container storage box of the present invention, the right-angled ridgeline is tuned upside on the box so that the opening face is easy to open using the ridgeline as the hinge of the opening face, and the packing and extraction of the container can be performed 15 automatically.

Moreover, both the vertical arrangement and the horizontal arrangement have the sense of incongruity in the indication, and the effect that the operator is easy to check the indication on the box in either of the arrangements is 20 acquired.

Moreover, when opening the box, the opening face is turned upside automatically, and the effect that the operation procedure to open the box is certainly understandable to the operator is acquired.

25 Moreover, the bag into which the contents of fine

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particles (for example, toner) which recommends every width by carrying out character arrangement so that it can read when it carries out every width, and coagulation is easy is put is long it is it is when large, the effect which prevents 5 coagulation by tare of the toner deposited on lengthwise is acquired.

Moreover, when it is made natural every width, there is the effect which can do the indication of the opening side for top and bottom.

10 Moreover, since it can fold thinly by preparing perforations and the fold in each ridgeline, there is the effect which can perform transportation and abandonment efficiently.

Moreover, since it can decompose small, the effect 15 which can be discarded efficiently is acquired.

Moreover, when opening is carried out, the effect which can extend opening so that it may be easy to take out the container is acquired.

Moreover, regardless of the upper and lower sides, 20 right and left, and order, the deforming container can be fixed, it is it puts and easy to carry out, and the effect excellent also in design characteristic is acquired.

Moreover, the effect which makes the container which is hard to shake easy to shake by recommending shaking 25 the flexible container which is easy to deform the whole box

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is acquired.

Moreover, the effect of preventing the pinhole, the crack, and the tear depended for rubbing in the container of the soft thin material is acquired by the inside making it 5 rival and preparing the rounded surface in the part.

Moreover, by using the corrugated paper material, the deformation of the container is prevented and the effect of giving box strength is acquired.

10 BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a development diagram of an embodiment of the container storage box of the invention.

FIG. 2 is a diagram showing a use mode of the container storage box of the present embodiment which is 15 configured and gathered so that it may be easily dealt with at the time of use or at the time of storage before use.

FIG. 3 is a diagram showing another use mode of the container storage box of the present embodiment which is configured and gathered so that it may be easily dealt with at 20 the time of use or at the time of storage before use.

FIG. 4 is a diagram showing another use mode of the container storage box of the present embodiment which is configured and gathered so that it may be easily dealt with at the time of use or at the time of storage before use.

25 FIG. 5 is a diagram showing another use mode of the

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container storage box of the present embodiment which is configured and gathered so that it may be easily dealt with at the time of use or at the time of storage before use.

FIG. 6 is a diagram showing another use mode of the
5 container storage box of the present embodiment which is configured and gathered so that it may be easily dealt with at the time of use or at the time of storage before use.

FIG. 7A, FIG. 7B and FIG. 7C are diagrams showing the composition of one example of the mechanism for
10 discharging the contents of the flexible bag-like container of the container storage box into an external device.

FIG. 8A and FIG. 8B are diagrams showing the composition of another example of the mechanism for discharging the contents of the flexible bag-like container of
15 the container storage box into an external device.

FIG. 9 is a diagram showing the composition of an embodiment of the developer storage container used in the container storage box of the invention.

FIGS. 10A through 10F are diagrams showing the
20 composition of another embodiment of the developer storage container used in the container storage box of the invention.

FIG. 11 is a perspective diagram of the container storage box in the embodiment of FIG. 1 when it is in assembly state.

25 FIG. 12 is a perspective diagram of the container

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storage box in the embodiment of FIG. 1 when it is folded to reduce its capacity.

BEST MODE FOR CARRYING OUT THE INVENTION

5 A description will now be given of the preferred embodiments of the invention with reference to the accompanying drawings.

In the present invention, as a packing material, the corrugated paper of E-flute/K6 is used, although not 10 necessarily restricted to this.

The packing material is not limited to this.

Alternatively, general-purpose sheets, such as a cardboard may be used, and preferably the corrugated paper material may be used.

15 FIG. 1 is a development diagram showing an embodiment of the container storage box of the invention. FIG. 11 is a perspective diagram of the container storage box in the embodiment of FIG. 1 when it is in assembly state.

As shown in FIG. 11, the container storage box of 20 this embodiment is assembled from the sheet material of FIG. 1, and it is generally in the shape of a hexahedron which has the four rigid sidewall faces (a), (b), (c) and (d), the large-area opening face (f), and the small-area face (e) opposed to the opening face (f).

25 The sheet material of FIG. 2 includes the tongue-

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shaped piece (f4) which serves as the lid component of the large-area opening face (f) and is bent along the hinge part (m), the opening face reinforcement flap (f6) which serves as the piece of reinforcement to the face opposed to the hinge 5 part (m), and the opening face reinforcement pieces (f1) and (f2) which are located opposite to the other opening sides than the piece (f4) and the flap (f6) and serve as the piece of reinforcement to the opening face (f). The flap (f6) is bent along the fold (L1) when assembled and serves as the 10 piece of reinforcement to the opening face (f).

The insertion tongue-shaped piece (c1) is provided at the leading edge of the tongue-shaped piece (f4) via the insertion opening (f5) and the fold (L5) which is used as the hinge. The slit-like cutout (S1) is formed in the flap (f6) 15 which is opposed to the hinge part (m).

After the tongue-shaped (f4) is bent along the hinge part (m) and serves as the lid component of the large-area opening face (f), the insertion tongue-shaped piece (c1) is inserted in the slit-like cutout (S1) so that it is 20 connected to the lid component of the opening face (f).

Moreover, the opening face reinforcement piece (f3) is provided in the portion of the sidewall (d). When the reinforcement piece (f3) is bent along the fold (L4) and its leading part is bent along the fold (L3), the leading part of 25 the reinforcement piece (f3) is in the state where it can be

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inserted in the insertion opening (f5) of the tongue-shape piece (f4).

The connection of the insertion tongue-shaped piece (c1) and the slit-like cutout (S1), and the connection of the 5 reinforcement piece (f3) and the tongue-shaped piece (f4) enable the container storage box of this embodiment to safely connect the lid component of the opening face (f) (or the tongue-shaped piece (f4)) even when the contents of the container swell. It is a matter of course that the double 10 connection mentioned above is not necessarily indispensable to the present invention.

Furthermore, in the container storage box of this embodiment, the slit-like cutout (S2) is formed in the base of the flap (F6). The reinforcement piece (f3) is inserted in 15 the slit-like cutout (S2). By this reinforcement piece (f3), the container storage box of this embodiment is allowed to prevent the separation of the flap (f6) from the insertion opening (f5) and safely connect the flap (f6) and the insertion opening (f5) even when the contents of the container 20 swell.

The insertion opening (f5) and the leading part of the opening (P1) (which is included in the flap (f6)) are open to each other and form a single opening when the reinforcement piece (f3) is raised. When the reinforcement piece (f3) is 25 removed from the opening face (f) of the container storage box

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of this embodiment and the tongue-shaped piece (f4) is removed from the cutout (S1), the single opening is useful when operating the reinforcement piece (f3) by the finger to open the lid.

5 Moreover, the slit-like cutout (S3) is formed also in the base of the reinforcement piece (f3). As is readily understood from the development diagram of FIG. 1, the container storage box of this embodiment can be easily assembled with the sidewall portion (e) which lies in the 10 middle of the sheet material being located at the leading edge of the assembled box.

FIG. 12 is a perspective diagram of the container storage box in the embodiment of FIG. 1 when it is folded to reduce its capacity after the deformable container in the box 15 is removed.

As apparent from FIG. 1 and FIG. 11, in the container storage box of this embodiment, the fold (L6) is provided for folding the sidewall face (a), the fold (L7) is provided for folding the sidewall face (b), and the fold (L8) 20 is provided for folding the tongue-shaped piece (f4). Hence, after the deformable container in the container storage box is removed, the container storage box of this embodiment can be folded along these folds to reduce its capacity.

However, the above folds are not provided in the 25 sidewall faces (c), (d) and (e). Therefore, even when the

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sidewall faces (a) and (b) are folded, the capacity of the portion in the vicinity of the sidewall face (e) is not reduced so that the vacant container from which the contents (the toner or developer) are ejected can be contained again in

5 the container storage box.

In FIGS. 2 through 5, contain the bag-like container flexible in it, and use is faced on the occasion of the storage before use.

FIG. 6 shows an example of the use mode of the
10 container storage box of the present embodiment that configures and gathered automatically so that it might be easy to deal with it is shown.

Another example of the container storage box which contained such a flexible bag-like container is shown, and the
15 one example of the mechanism which discharges the contents in the flexible bag-like container in another device from such a container storage box is shown in FIGS. 7 through 9.

Although not necessarily restricted to this form, the container storage box of the embodiment shown in FIGS. 1
20 through 6 is thrown into the container loading part of the image forming apparatuses, such as the copier, and the fluidity contents for image formation is suitably used in the deformable or flexible container which can be discharged smoothly, for the purpose of storage.

25 In the container storage box of the present

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embodiment, the gap with the sidewall face (c) which counters as the sidewall face (d) does not stand up right-angled to the opening face (f), but stands up acutely more than the right angle and is from the opening face (f) side on the small-area 5 face (e) side becomes narrow gradually.

Moreover, the opening face (f) side is broader so that the sidewall faces (c) and (d) may be clearly understood not from the rectangle but from FIG. 2 -6.

At the time of storage, the form is regulated by 10 this and, as for the flexible container accommodated inside, the random deformation is avoided.

Moreover, it is located in the opening face (f) from the small-area face (e) side, space is automatically provided at the small-area face (e) side, and the deformation 15 of the head part of the flexible container can be avoided.

Furthermore, the space becomes easy to be made at the small-area face (e) side automatically, and the buffer effect is acquired.

The form which can be carried in the container 20 loading part of the image forming apparatuses, such as the copier, as it is retained, and the deformation of the outlet smoothly most important for discharge and displacement are prevented in the intension.

Moreover, the sidewall faces (c) and (d) can begin 25 to catch the predetermined storage box easily from the set

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with which the opening face (f) side is not rectangle but has been configured for the alternations of the container storage box of the present embodiment by being broad.

In the container storage box, the direction of the 5 sidewall face (c) and the gap between (d) is narrow suddenly, and the direction of the sidewall face (a) and the gap between (b) is not narrow not much rapidly.

However, the container storage box of the present invention is not necessarily restricted to the present 10 embodiment.

For example, the sidewall face (a) which opposes the sidewall face (a), (b), and (c) among (d), the gap of (b), or the sidewall face (c) and the gap of (d) may become narrow gradually.

15 Moreover, the container storage box of the present invention does not necessarily need to be the rectangle. It may have the round shape and the rounded surface portion.

The flexible container accommodated in the inside is the of the cylinder form in many cases rather than the 20 manufacturing method (the blow molding, inflation molding) is reflected and it is the rectangle.

Even in such a case, it is necessary for some inner walls at least of the portion which counters to satisfy the above-mentioned requirements in short, and, thereby, the 25 effect that the container can be protected without the shock

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absorbing material, and the effect which can reduce the part mark of packing material and can carry out with low cost are demonstrated.

Moreover, since there is no portion to fix, the
5 effect that the assembly of the box, and packing and extracting of the container which is packed up in it and which can be deformed can be performed easily is demonstrated.

In this example assembled from the corrugated paper material of the development shown in FIG. 1

10 The sidewall face portions (a1) and (b1) set to the rigid sidewall faces (a) and (b) by folding the fold (h1) (h2) of the both sides of the rigid sidewall face (c) of the container storage box inside is made to stand up.

The reinforcement portions (a2) (b2) of the
15 sidewall faces (a) and (b) are made to stand up similarly by folding the fold (k1) (k2) of the both sides of the rigid sidewall face (d) inside.

The reinforcement portion (a2) (b2) which stood up
is later stuck on the inside side of the sidewall face
20 portions (a1) and (b1).

Of course, the position of the sidewall face portions (a1) and (b1) and the position of the reinforcement portions (a2) and (b2) are appropriate, even if it is exchanged mutually, the reinforcement portion (a2) (b2) is
25 prepared in the both sides of the rigid sidewall face (c) and

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the sidewall face portions (a1) and (b1) are instead prepared in the both sides of the rigid sidewall face (d).

Or it is the sidewall face instead of only the part interchanging, for example, the reinforcement partial sidewall 5 face portion (a1) and the reinforcement portion (a2) not changing, but the reinforcement portion (b2) being prepared in the sidewall face portion (c) and (b1). It may be prepared in the sidewall face (d).

Furthermore, the magnitude of the reinforcement 10 portion (a2) (b2) may be the same as the magnitude of for example, the sidewall face portion (a1) (b1).

In the case of the opening face (f) and the small-area face by the side of opposite this (e) the same the piece of the opening face (f1) for the opening face (f) (f2) (f3), 15 and (f4) the part or all can be replaced.

These are determined by balance with the request of not making the part mark pierced when the amount of occurrences of the chip is lessened and is made as much as possible at the time of the punch of box material from the 20 strength of the manufactured box, the workability of manufacture, manufacture time, and the source material increase to two or more.

The fold which bends the fold (j1) (j2) of the both sides of the small area face (e) inside, and serves as the 25 hinge part of the piece of the opening face (f4) for the

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opening face (f) (m).

The fold used as the hinge part prepared by the request with the cut (k1) (k2) of both sides (m1).

The fold used as the hinge part for the

5 intercalation tongue-shaped piece (c1) prepared at the leading edge of the opening face (f4) (n1).

The folds (L1) and (L2) of the opening face reinforcements (f1) and (f2) for the opening face (f).

The fold used as the hinge part for the

10 intercalation tongue-shaped piece (f3) prepared at the leading edge (L3).

The fold (L4) used as the hinge part prepared by the request is bent inside, the outside of the reinforcement portion (a2) (b2) is sized, and it enables it to stick this 15 reinforcement portion (a2) (b2) inside the sidewall face portion (a1) (b1).

The intercalation mouth (f5) for the intercalation tongue-shaped piece by the side of this and opposite (f3) is prepared in the bending portion of the intercalation tongue-shaped piece (c1) which the piece of the projection (g1) which remains without being bent when the fold (j2) is bent so that 20 it may be projecting (G) after the box assembly is prepared in the small area side (e), and is prepared at the leading edge of the opening face piece (f4).

25 Although these explanation is not for explaining

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the bending order of each above-mentioned fold, the container storage box assembled can understand it well.

As clearly shown in FIGS. 2 through 6, in the container storage box of the present embodiment, the opening 5 face (f) different from the sidewall faces is provided in the larger one gap among the both ends of the 2 surface of a wall (c) which carries out the opposite inclination, and (d), and extraction of the contents is made convenient.

Moreover, this makes every side of the container 10 storage box, and every pile easy for the surface (c) of the direction where it does not incline of the two sides (c) and the (d) to lie at right angles to the opening face (f), and to sense.

Thus, it inclines among four sidewall faces (a), 15 (b), (c), and (d), and the 2 surface of a wall (a) different from the two sides (c) which counters, and (d), and (b) incline so that it may similarly be tapered.

Furthermore, the small area side (e) by the side of opposite of the opening face (f) makes the large-area opening 20 face (f) easy to choose it as the bottom automatically, when standing and placing this container storage box for example, on the desk.

Moreover, the surface of a wall (d) of the direction which inclines, and inclines in the container 25 storage box of the present embodiment as shown in FIG. 5 among

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the two sides (c) which counters, and (d) the projection (G) is prepared in the small area (side e) side edge part of the component.

When the surface of a wall (d) of the direction
5 where the container storage box inclined is opposed by this and it stacks, the upper storage box is stopped by the lower storage box.

Furthermore, when the surface (d) of the direction which inclines among the two sides (c) which counters, and (d)
10 uses as the hinge (m) of the opening face the end acute angle ridgeline at which the opening face (f) is crossed, return of the bent opening face (f4) is made easy, and thereby facilitates opening of the opening face (f) for taking out the contents is made easy.

15 Moreover, the indication concerning the surface contents as clearly shown in FIGS. 2 through 6.

It is configured so that the slope (d) of the two sides which the 1st at least page inclines and counters may serve as the bottom (the front side), and the indication about
20 the handling of the contents.

The contents which include the supply method of contents, such as the toner and the developer, in the surface of the indication about the surface contents and opposite side, and the indication which shows how to deal with the deformable
25 container are configured.

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This display includes the indication which recommends shaking the deformable container contained in the box the whole box, when the contents is what it is toner easy to condense.

5 It is the sheet material the container storage box of the present embodiment the core box which the surface of a wall can bend.

The crease is made so that the strength in the assembly state may not be dropped.

10 Moreover, although not clearly shown in FIGS. 2 through 6, the perforations which are so small in size and does not affect the strength in the assembly state may be provided on the ridgeline of the container storage box.

Moreover, perforations finer than the above-15 mentioned perforations are prepared in the ridgeline which is the hinge (L3) of the opening, and beside (m) so that the strength in the assembly state may not be dropped.

Since the corrugated cardboard material is used, the container storage box of the present embodiment is 20 satisfactory in the strength.

Moreover, it is simply the fold attachment and certain.

Furthermore, the container storage box has the partial lamination end as mentioned above.

25 Moreover, the rounded surfaces R are formed at the

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bending portions on the side of the inner walls of the box and at the lamination ends as shown in FIGS. 2 through 6.

Moreover, the shock absorbing material which secures the deformable container by contact-surface resistance 5 may be installed in the container storage box, and the container storage box may be provided in a rectangular prism configuration.

Especially when the deformable containers contained are the toner and developer storage container, they are 10 effective.

Although it has the outlet of the contents, this outlet is usually made into the small area side (e) side and it is contained in the storage box, as the container contained inside in the present invention is shown in FIG. 8.

15 When loading another image forming apparatus which has the flexible container entrance slot of the width (L) shown in FIG. 7 in this, as shown in FIG. 6, it is possible to use the two sides (c) which inclines and counters, and (d) as a side-surface regulation holding member which regulates the 20 length (L) of the flexible container.

Moreover, it can use suitable for the developer storage container characterized by forming the discharging part 322 for discharging the toner or developer contained on the main part 321 of the agent container which makes the 25 sealing structure which may be the agent container 320 which

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contains the developer which mixes the toner or the toner, and the carrier and becomes as the one example is shown in FIG. 9, and may be the bag, and the air feed zone 330 for flowing in the air in the main part of the container concerned.

5 Although this developer storage container is not indispensable the toner discharge part 322 of the toner storage container 320 the toner guide the nozzle the component 323 and the air feed zone 330 the object for air supply the nozzle the joining of the component 331 may be carried out by 10 the supersonic wave etc., respectively, and it may be bonded integrally.

Furthermore, the bag 321 makes the flexible sheet which are the products made of the resin, such as the polyethylene and the nylon, and had the thickness of about 80-15 120 micrometers the composition of the lamina or the double layer, may be made, and the joining of the circumference part is carried out also for this bag 321 by the supersonic wave etc., and it may have sealing structure.

Through the aluminum vacuum evaporation processing 20 on the surface of the sheet which constitutes bag 321 the cure against the static electricity effective moreover, the toner guide the nozzle the component 323 and the object for air supply the nozzle if the component 331 can also be made the products made of the resin, such as the polyethylene and the 25 nylon, and is set as the same material as bag 321, it is

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convenient although recycled.

On the other hand the toner guide the nozzle the component 323 can be formed from the material homogeneous as the main part 320 of the container, or can form the adhesion 5 toner from the removable hard material easily. The bag 321 the upper part setting between the toner discharge part 322 and the air feed zones 330 the partition the component 324 is formed.

The partition the component 324 is prolonged toward 10 the lower part from the upper part, and forms the two chambers attained to near the bottom of bag 321.

The partition the lower end of the component 324 and the open portion to the bag 321 bottom serve as the free passage part 326 which connects the two chambers.

15 The object for air supply made from the resin which this main part 320 of the container is also built by the blow-molding method etc., and is able to prepare the toner discharge part although it is not indispensable the nozzle the bag made by the component 331 by carrying out the products 20 made of the resin, such as the about 80-200-micrometer polyethylene, the polypropylene, the nylon, and the polyester, or the flexible sheet made of paper at the lamina or the double layer can be fixed and constituted.

On the other hand the toner guide the nozzle the 25 component 323 can be formed from the material homogeneous as

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the main part 320 of the container, or can form the adhesion toner from the removable hard material easily.

The developer storage container can also be easily disassembled into the flexible main part 321 of the developer storage container, and the developer discharge part 322 after 5 use.

Moreover, the sheet-like sealant appends on the entrance of the main part of the container having the nozzle from the top since the component is inserted in the nozzle the 10 component is not polluted by the toner.

Moreover, this nozzle the component has compatible structure with the same structure as the tubular toner transfer and filling unit end which are used in the case of toner filling to the copier etc.

15 For example, since the screw fitting mechanism is established, neither the hand nor clothes is soiled in the case of the toner filling work to the copier etc.

Furthermore, the toner storage container which is the toner storage container with which the toner of the fine 20 particles used for the electrophotographic image forming apparatus is contained as one example is shown in FIGS. 10A to 10F, is the polyhedron of the core box or the 6th page object etc. which is formed in the shape of a plane and characterized by having the at least two surfaces 402 and 407 which may be 25 almost parallel into the portion except the toner discharge

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part 410, and is obtained is indicated.

In the toner storage container, the front and back surfaces 402 and 407 may be formed in the same size and the same shaper and may be formed into the trapezoid in which the 5 width of the lower portions becomes narrow, although this is not indispensable.

For example, the case of the 6th page object other larger area than the 4th page having the inside of other 4th page the surface of the at least 1 part the rounded surface it 10 is possible to be toner discharge the pore 410 may be closed by the piece of the seal.

Thus, since the front 402 and the back surface 407 are the parallel even surface mutually, it can put and the constituted toner storage container can be kept.

15 When the front 402 and the back surface 407 have other larger area than the 4th page, while being able to keep it in the state which the falling does not occur where it is stabilized, the weight per which the toner by the side of the lower part receives as compared with the case where it carries 20 out every length unit area becomes small about this, and toner coagulation which is easy to produce by long-term storage etc. can be mitigated.

Moreover, as shown in FIGS. 10A to 10F, what has the trapezoid side can be carried out for the packaging, the 25 storage, the conveyance, etc. in the form of the standardized

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size like the two-piece doubling A4 size and A5 size.

Furthermore, after use can be folded up and reduced and can be collected by low physical distribution cost.

In the above example, the deformable container is
5 used as the toner cartridge, and by the deformation, it is the purpose regulated so that it may not swell in the magnitude which cannot be set to the main part of the image forming apparatus, and could be 85mmx120mm which is the magnitude which can set the magnitude of the container-storage-box
10 bottom cross-section to the main part of the image forming apparatus.

In addition, since the amount of contents changes by the kind of main part of the image forming apparatus, and the color of the toner, the cross-section area at the bottom
15 of the container storage box is not restricted to this.

Here, using the two sides of packing material, the form of packing material as shown in FIGS. 1 through 6 is built so that neither the charge of fixed material of the position nor the shock absorbing material might be used but
20 the container could be pressed down by contact-surface resistance.

Moreover, the portion which is tapered among the form of packing material as shown in FIGS. 1 through 6 is made higher than the container, space is prepared, and the buffer
25 effect is given.

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Moreover, the opening is prepared so that the inclining surface might be used as the hinge and the opening might be carried out from the container storage box bottom in the form of packing material as shown in FIGS. 1 through 6.

5 Moreover, even if it prepared the height like FIG. 5 at the nose of cam of the inclining surface and having been piled up to the slope, it is made not to slide down by the projection.

Moreover, prepare the fold in the side surface, it
10 enables it to fold up in the form of packing material as shown in FIGS. 1 through 6, and perforations are prepared on each acute angle ridgeline.

Furthermore, on the acute angle ridgeline of the lid which carries out opening, the perforations which can do
15 the cutoff easily were prepared and the extraction capability at the time of opening is raised.

Furthermore, the printing indication is given so that the inclining surface might become the front side, and the operation diagram has been configured in the opposite side.

20 The present invention is not limited to the above-described embodiments and variations and modifications may be made without departing from the scope of the invention.